



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/982,926 | 10/22/2001 | Shih-Hsiung Ni | 108339-00053 | 8459 |
| 32294 | 7590 | 08/23/2005 | | EXAMINER |
| | | | | YANG, LINA |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2665 | |

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 09/982,926 | NI, SHIH-HSIUNG | |
| | Examiner | Art Unit | |
| | Lina Yang | 2665 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 July 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-21 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. ____.
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Fawaz et al. (U.S. Patent No. 6,714,517 B1).

1. Regarding claim 1, Fawaz teaches a method of prioritizing packet flows within a switch (QoS node, col 6 lines 56-60; 102 or 106 in fig. 6 or fig. 8) comprising of:

receiving a packet at an input port (col 1 lines 39-42); stamp the packet with an arrival time (col 13 lines 56-58);

classifying the packet into a flow (col 4 lines 33-44; col 7 lines 30-33); wherein the flow is determined based upon at least a class of service of the packet (col 4 lines 33-44; col 7 lines 48-52);

assigning the packet to a queuing ring according to the flow of the packet (col 4 lines 44-45, col 7 lines 48-52; col 4 lines 56-57; col 9 lines 64-67); and

maintaining a flow ratio pending within the switch based upon the flow of the packet (col 10 lines 11-16).

2. Regarding claim 3, Fawaz teaches a switch for prioritizing and routing a packet through a communication system, said switch comprising:

an input port for receiving the packet from an input source (col 1 lines 39-42);
a time stamp for stamping the packet with an arrival time (col 13 lines 56-58);
a classification module for determining a flow of the packet (col 4 lines 33-44; col 7 lines 30-33); wherein the flow is determined based upon at least a class of service of the packet (col 4 lines 33-44; col 7 lines 48-52);

a queuing module for assigning the packet to a queuing ring according to the flow of the packet (col 4 lines 44-45, col 7 lines 48-52; col 4 lines 56-57; col 9 lines 64-67); and

a flow control module for maintaining a flow ratio pending within the switch based upon the flow of the packet (col 10 lines 11-16).

3. Regarding claim 5, Fawaz teaches a switch for prioritizing and routing a packet through a communication system, said switch comprising:

receiving means for receiving a packet at an input port (col 1 lines 39-42);
stamping means for stamping the packet with an arrival time (col 13 lines 56-58);
determining means for determining a flow of the packet, wherein the flow is determined based upon at least a class of service of the packet (col 4 lines 33-44; col 7 lines 30-33 and lines 48-52);

queuing means for assigning the packet to a queuing ring according to the flow of the packet (col 4 lines 44-45, col 7 lines 48-52; col 4 lines 56-57; col 9 lines 64-67); and
maintaining means for maintaining a flow ratio pending within the switch based upon the flow of the packet (col 10 lines 11-16).

4. Regarding claim 7, Fawaz teaches a switch (QoS node, col 6 lines 56-60; 102 or 106 in fig. 6 or fig. 8) for prioritizing and routing a packet through a communication system comprising:

an input port for receiving a packet from an input source and an output port for transmitting the packet to an output destination (col 1 lines 39-42);

a queuing module configured to determine a flow of the packet and assign the packet in a queue based upon the flow, wherein the flow is determined based upon at least a class of service of the packet (classifier 304 in fig. 6, classifier/scheduler 404 in fig. 8; col 4 lines 33-45 and lines 56-57; col 7 lines 30-33 and lines 48-52);

a scheduling module configured to schedule the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet (scheduler 316 in fig. 6 and classifier/scheduler 404 in fig. 8);

a flow control module configured to maintain a flow ratio pending within the switch based upon the flow of the packet, and to control a transmission rate of the packet from the output port based upon the flow of the packet (col 5 lines 1-12; col 12 lines 21-40);

a conflict determination module configured to determine if a conflict exists when the packet is scheduled to be transmitted from the output port; a threshold indicator module configured to provide a threshold status based upon the flow ratio (col 11 lines 15-35); and

a transmission module to transmit the packet from the output port according to the schedule determined by the scheduling module (col 1 lines 39-42).

5. Regarding claim 12, Fawaz teaches a method of prioritizing packet flows, comprising the steps of:

receiving a packet into an input port (claim 9);
transmitting the packet from an output port (claim 9);
determining a flow of the packet, wherein the flow is determined based upon at least a class of service of the packet (col 4 lines 33-44; col 7 lines 48-52);
assigning the packet to a queue according to the flow of the packet (col 4 lines 44-45, col 7 lines 48-52; col 4 lines 56-57; col 9 lines 64-67);
scheduling the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet (scheduler 316 in fig. 6 and classifier/scheduler 404 in fig. 8);
maintaining a flow ratio pending within the switch based upon the flow of the packet (col 10 lines 11-16; col 12 lines 21-40);
controlling a transmission rate of the packet from the output port based upon the flow of the packet (col 12 lines 21-40);

determining if a conflict exists where the packet is scheduled to be transmitted from the output port (col 11 lines 15-35);

providing a threshold status based upon the flow ratio (col 11 lines 15-35; 318 in fig. 6 and 418 in fig. 8); and

transmitting the packet from the output port within the selected time interval (claim 9).

6. Regarding claim 17, Fawaz teaches a switch for prioritizing and routing a packet through a communication system, the switch comprising:

receiving means for receiving a packet into an input port (claim 9);

transmitting means for transmitting the packet from an output port (claim 9);

determining means for determining a flow of the packet, wherein the flow is determined based upon at least a class of service of the packet (col 4 lines 33-44; col 7 lines 48-52);

assigning means for assigning the packet in a queue according to the flow of the packet (col 4 lines 44-45, col 7 lines 48-52; col 4 lines 56-57; col 9 lines 64-67);

scheduling means for scheduling the transmission of the packet from the queue within a selected time interval before the transmission of a next outgoing packet (scheduler 316 in fig. 6 and classifier/scheduler 404 in fig. 8);

maintaining means for maintaining a flow ratio pending within the switch (col 10 lines 11-16; col 12 lines 21-40);

controlling means for controlling a transmission rate of the packet from the output port based upon the flow of the packet (col 12 lines 21-40);

determining means for determining if a conflict exists when the packet is scheduled to be transmitted from the output ports (col 11 lines 15-35);

providing means for providing a threshold status based upon the flow ratio (col 11 lines 15-35; 318 in fig. 6 and 418 in fig. 8); and

transmitting means for transmitting the packet from the output port within the selected time interval (claim 9).

7. Regarding claims 2, 4, 6, 8, 13 and 18, the flow ratio is for any type of data, inherently including voice and video data.

8. Regarding claims 9, 14 and 20, Fawaz further teaches that the switch further comprising: a conflict resolution module configured to instruct the scheduling module, if the conflict exists and the flow ratio exceeds the threshold, to drop from the output port the next outgoing packet of the flow that exceeds the threshold to deny entry into the input port of a next incoming packet belonging to a new voice flow or a new video flow (fig. 10; col 11 lines 36-55; col 12 lines 21-40).

9. Regarding claims 10, 15 and 20, Fawaz further teaches that the switch further comprising: a conflict resolution module configured to instruct the scheduling module, if the conflict exists and the flow ratio exceeds the threshold, to deny entry into the input

port of a next incoming packet belonging to a new voice flow or a new video flow (col 11 lines 63-66; col 12 lines 21-40).

10. Regarding claims 11, 16 and 21, Fawaz further teaches that to instruct the scheduling module, if the conflict exists and the flow ratio exceeds the threshold, to select for transmission the packet from the flow which does not exceed the threshold (only the receiving and transmitting activities for those SLAs exceeding the threshold will be stopped, as shown in fig. 8).

Response to Arguments

Applicant's arguments filed 7/18/2005 have been fully considered but they are not persuasive.

The following are the responses to the applicant's arguments on page 7.

(1) Fawaz fails to disclose or suggest assigning the packet to a queuing ring;

-In reply, Fawaz discloses assigning the packet to a queue (fig. 8) or queues (fig. 6) according to the classification of the packet.

(2) Fawaz fails to disclose or suggest assigning the packets according to the flow of the packets;

-In reply, Fawaz discloses that the packets are classified according to service level agreement (col.4 lines 39-40). Since the flow is determined by the service level agreement, therefore, the packets are assigned according to the flow of the packets.

In combination, Fawaz further discloses that assigning the packet to a queuing ring according to the flow of the packets.

(3) Fawaz fails to maintain a flow ratio using the weights, thus fails to disclose or suggest maintaining a flow ratio pending within the switch based upon the flow of the packet.

-In reply, Fawaz discloses that each SLA-k is assigned a weight $M(k)$. As shown in fig. 9, 4 type 1 packets arrived at the input, but the weight factor limits the number of type 1 packets to output, 3 in this case. Thus, regardless of the number of different types of packets arrived at the input, the output packets are maintained within the node in the certain ratio according to the packets' type.

Therefore, Fawaz discloses to maintain a flow ratio using the weights, and further discloses maintaining a flow ratio pending within the switch based upon the flow of the packet.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Duffield (U.S. Patent No. 6,452,933 131) discloses an apparatus for routing packets in a communication network comprises a plurality of per-connection queues, each queue established for receiving packets from a respective source and temporarily storing received packets before routing to a particular destination; a weighted fair-queuing scheduler for servicing packets from each of the plurality of per-connection queues at guaranteed pre-allocated rates; a sensing device for sensing a presence or absence of packets in queues, the absence of packets in queues indicating availability of excess bandwidth; and, a state dependent scheduler for redistributing excess bandwidth upon sensing of queues absent packets, the state dependent scheduler servicing those queues in accordance with a state variable corresponding to a performance property of the queues, wherein delay and isolation properties for routing packets of respective queues in weighted fair-queuing is preserved.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lina Yang whose telephone number is (571)272-3151. The examiner can normally be reached on 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 517-273-8300..

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LY



HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600